Testing the Hypothesis that Septic Systems have anything to do with "hot spots" of pollution in Puget Sound - 8-14-2016

There appears to have been millions wasted on measuring "hot spots" of pollution in Puget Sound with no scientific approach to determining the cause. It appears that King County Heath has jumped to an end conclusion that OSS systems are the cause and should be "taxed" without any scientific foundation.

There is a very simple statistical method called Analysis of Variance where logical "tests" of various hypotheses as to cause can be made based on OSS failure rates and in areas where there are "hot spots" and more importantly comparing failure rates in "cold spots" (locations in Puget Sound where there is no significant pollution measurements).

In Layman's terms here is the necessary data:

For hot and cold spots determine the proven failure rate for the following potential contributors over a period of time:

A. % of residences OSS Systems feeding ground water flowing to the Sound
B. % of residences without OSS Systems feeding ground water flowing to the Sound
C. % of residences with "treated" sewage feeding the Sound
D. % of residences with "untreated" sewage either purposefully or accidentally feeding the Sound

In order to "rule-in" or "rule-out" any of the potential sources you statistically test the probability that A through D are adversely contributing to the "hot spot".

As an Example if over 10 sampling periods of say a year the following data of events per 1000 OSS systems occurred for hot and cold spots:

Year =	1	2	3	4	5	6	7	8	9	10	Average OSS Failures	Standard Deviation	95% T Confidence Interval
Hot Spots =	1.1	1.2	1.3	1.1	0.9	0.8	0.6	0.9	1.1	1.0	1.00	0.194936	0.003974616
Cold Spots=	0.9	1.4	1.5	1.0	0.6	1.0	0.5	1.0	0.6	1.0	1.00	0.223607	0.004559198

Likewise these results could be spread over multiple hot and cold spots. In this example the Analysis of Variance method to "test" the hypothesis that OSS system failure cause the "hot spots" returns a probability of 8.54338E-08 or put in layman's terms, there is a 1 in 800 million chance that the OSS systems are causing the "hot spots" and we need to be looking at B through D for a positive correlation.

There is a corollary to this logic that says if the OSS systems failure rate has nothing to do with pollution in the Sound and it's just the mere existence of them, then one must ask; "If this is so, why are there "Cold Spots" in the presence of a large number of Septic Systems?

Clearly there is a scientific method to resolving the issue of the OSS contribution if any, but there is also a scientific method using the same analysis on B through D to determine their correlation with the Problem. A more expansive analysis model will readily give that answer.

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